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10/534,331

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Frank Miller

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EXAMINER

GORMAN, DARREN W

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3752

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|--------------------------------------|--|
| Office Action Summary | Application No. 10/534,331 | Applicant(s) MILLER ET AL. | |
| | Examiner Darren W. Gorman | Art Unit 3752 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 June 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 14, 15, 19-22 and 24-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 14, 15, 19-22 and 24-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 May 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on June 9, 2009 has been entered.

Drawings

2. As noted in the Advisory Action mailed June 18, 2009, the Examiner will approve for entry the drawing sheet filed June 9, 2009 provided that Applicant disclaim, with a specification amendment, the specific substance of the drawing regarding the depicted arrangement, dimensions and relative dimensions of the bore holes. Since Applicant has not yet included such a disclaimer in a specification amendment, the drawing sheet filed June 9, 2009 is not yet entered. Thus, the objection to the drawings under 37 CFR 1.83(a) as set forth in the office action mailed March 9, 2009 with respect to the drawings as not showing the features of recited in claim 24 remains outstanding.

Further, as noted in the Advisory Action mailed June 18, 2009, the "NEW" drawing sheet filed June 9, 2009 is labeled "Fig. 3C", while the corresponding specification amendments filed therewith refer to this drawing figure as "Fig. 3". Thus, in addition to adding a disclaimer to the

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specification, as discussed above, any subsequent amendments filed by Applicant should include a correction to the drawing figure which changes the label from “Fig. 3C” to “Fig. 3”.

Double Patenting

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

4. Claims 14, 15, 19 and 25-27 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 14-17, 28 and 29 of copending Application No. 10/531,408. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of the aforementioned co-pending application recite each of the essential structural elements of claims 14, 15, 19 and 25-27, although the claim terminology varies. The co-pending claims recite an atomization tube (nozzle body) with at least a first upstream section (upper end) and a second downstream section (lower end), the first section having at least one of an outer diameter and a wall thickness that is

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different than that of the second section (see co-pending application claims 28 and 29); an air inlet (gas supply port, see co-pending application claim 17); and at least one metering aperture (metering aperture situated at the upper end of the nozzle body); wherein the second section includes a plurality of bore holes on an outer wall along a length of the atomization tube (spray discharge orifices situated at elevation steps).

However, the claims of the co-pending application do not expressly recite a “fuel injector”, nor do they expressly recite the process of the instant application claim 25 for shaping the atomization tube. Further, the claims of the co-pending application do not expressly recite a specific diameter range of the bore holes or a specific ratio range between a diameter and a length of the bore holes as recited in the instant application claims 26 and 27.

As to the lack of an expressly recited fuel injector, it is noted that the claimed apparatus of the co-pending application, being an atomizer for a fuel, would require some sort of fuel injector upstream from the metering aperture in order to input fuel to the nozzle body. Therefore, it would have been obvious to one having ordinary skill in the art to include a fuel injector with the claimed device of the co-pending application in order to inject fuel into the metering aperture of the nozzle body.

As to the recitations of claim 25, such recitations are merely product-by-process limitations. Thus, it would have been obvious to form an outer shaping of the atomization tube of the apparatus of the co-pending claims using one of the processes recited in claim 25 of the instant application, since the patentability of a product does not depend on its method of production.

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As to the specifically recited diameter range of the bore holes and the specifically recited ratio range between a diameter and a length of the bore holes, it would have been obvious to one having ordinary skill in the art at the time the invention was made to determine optimum bore hole diameters and optimum diameter-to-length ratios of the bore holes of the apparatus of the co-pending claims, since it has been held where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art.

In re Aller, 105 USPQ 233.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 24 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The recitation, “wherein: diameters of the bore holes per level increase in a downstream direction” is unclear. No “level(s)” are recited in claim 14, thus the metes and bounds of “per level” cannot be determined.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 14, 15, 19-22 and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Tsuji, USPN 3,913,845.

Tsuji shows at least one embodiment of a device which meets the structural limitations of the claims. With respect to the arrangements of Figures 1-3 of Tsuji, the devices comprising: a fuel injector (upstream device which inputs fuel to fuel passage (2) and fuel port (2a)); an atomization tube (4) including at least a first section and a second section, wherein the first section has both an outer diameter and a wall thickness that is different than that of the second section (see Figure 1), and wherein the second section is downstream from the first section; an air inlet (3a); and at least one metering aperture (2a); wherein the second section includes a plurality of bore holes (6a, 6b, 6c, 6d) at each of a plurality of positions on an outer wall (front face of atomization tube (4)) of the atomization tube, along a length (Figures 2 and 3 show two variations of bore hole arrangements along a length) of the atomization tube.

With respect to the arrangement of Figure 4 of Tsuji, the drawing shows only a modified atomization tube, although Tsuji expressly discloses that the components upstream from the atomization tube are the same as what is shown in Figure 1 (see column 2, lines 22-26). Thus, the arrangement of Figure 4 of Tsuji comprises: a fuel injector (upstream device which inputs fuel to fuel passage (2) and fuel port (2a)); an atomization tube (4) including at least a first

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section and a second section, wherein the first section has a wall thickness that is different than that of the second section (upstream end of the tube is shown to have a thinner wall thickness than that of the remaining portions of the tube), and wherein the second section is downstream from the first section; an air inlet (3a); and at least one metering aperture (2a); wherein the second section includes a plurality of bore holes (6a, 6b, 6c, 6d) at each of a plurality of positions on an outer wall of the atomization tube, along a length (the length being defined from an upstream end to a downstream end of the tube) of the atomization tube. Figure 4 also clearly shows diameters of the bore holes increasing in a downstream direction (6c is shown to have a larger diameter than 6d; 6b is shown to have a larger diameter than 6c; and 6a is shown to have a larger diameter than 6b).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuji.

Regarding claim 25, Tsuji shows all of the recitations set forth in claim 14, however Tsuji does not expressly disclose any of the recited processes by which the atomization tube is formed. It is however noted that the recitations of claim 25 are merely product by process recitations. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or an obvious variant from a product in the prior art, the

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claim is unpatentable even though the prior product was made by a different process (see MPEP 2113). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to form the atomization tube of Tsuji from at least one of the processes recited in claim 25.

Regarding claims 26 and 27, Tsuji shows all of the recitations set forth in claim 14, however Tsuji does not expressly disclose a specific optimum diameter range of the bore holes, and Tsuji does not expressly disclose an optimum ratio between a diameter and a length of the bore holes, although discovering such optimum ranges would be within the skill of one in the art through routine experimentation and engineering expedience in order to determine optimum or desired effluent spray characteristics from the bore holes. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to determine optimal bore hole diameters and optimal diameter-to-length ratios of the bore holes of Tsuji through routine experimentation and engineering expedience in order to determine optimum or desired effluent spray characteristics from the bore holes, since it has been held where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Response to Arguments

11. Applicant's arguments, see pages 8-9 of the "Remarks" section of the response filed June 9, 2009, with respect to the prior art claim rejections as set forth in the office action mailed March 9, 2009 in view of the European Patent Application Publication to Son et al., have been considered but are moot in view of the new grounds of rejection set forth above.

Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Darren W. Gorman whose telephone number is 571-272-4901. The examiner can normally be reached on M-F 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Len Tran can be reached on 571-272-1184. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Darren W Gorman/
Primary Examiner, Art Unit 3752